Quick setup guide

Submersible pressure transmitter with ceramic measuring cell

VEGABAR 86

Foundation Fieldbus

Document ID: 46323

Contents

1 For your safety
1.1 Authorised personnel ... 3
1.2 Appropriate use ... 3
1.3 Warning about incorrect use ... 3
1.4 General safety instructions ... 3
1.5 CE conformity ... 3
1.6 Permissible process pressure ... 3
1.7 NAMUR recommendations ... 4
1.8 Environmental instructions ... 4

2 Product description
2.1 Configuration ... 5

3 Mounting
3.1 General instructions for use of the instrument ... 7
3.2 Ventilation and pressure compensation ... 7

4 Connecting to the bus system
4.1 Connecting ... 8
4.2 Single chamber housing ... 9
4.3 Double chamber housing ... 10

5 Set up with the display and adjustment module
5.1 Insert display and adjustment module ... 12
5.2 Parameter adjustment - Quick setup ... 13
5.3 Parameter adjustment - Extended adjustment ... 14

6 Supplement
6.1 Technical data ... 17

Information:
This quick setup guide enables quick setup and commissioning of your instrument.

You can find supplementary information in the corresponding, more detailed Operating Instructions Manual as well as the Safety Manual that comes with instruments with SIL qualification. These manuals are available on the supplied DVD or in the download area of "*www.vega.com*".

Operating instructions VEGABAR 86 - Foundation Fieldbus: Document-ID 45043
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1 For your safety

1.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the plant operator.

During work on and with the device the required personal protective equipment must always be worn.

1.2 Appropriate use

Model VEGABAR 86 is a pressure transmitter for level and gauge measurement.

You can find detailed information about the area of application in chapter "*Product description*".

Operational reliability is ensured only if the instrument is properly used according to the specifications in the operating instructions manual as well as possible supplementary instructions.

1.3 Warning about incorrect use

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment.

1.4 General safety instructions

This is a high-tech instrument requiring the strict observance of standard regulations and guidelines. The user must take note of the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.

The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for trouble-free operation of the instrument.

During the entire duration of use, the user is obliged to determine the compliance of the necessary occupational safety measures with the current valid rules and regulations and also take note of new regulations.

1.5 CE conformity

The device fulfills the legal requirements of the applicable EC guidelines. By affixing the CE marking, we confirm successful testing of the product.

You can find the CE Certificate of Conformity in the download section of our homepage.

1.6 Permissible process pressure

The permissible process pressure is specified on the type label with "Process pressure", see chapter "*Configuration*". For safety reasons,

this range may not be exceeded. This applies even if a measuring cell with a measuring range (order-related) higher than the permissible pressure range of the process fitting is installed.

1.7 NAMUR recommendations

NAMUR is the automation technology user association in the process industry in Germany. The published NAMUR recommendations are accepted as the standard in field instrumentation.

The device fulfills the requirements of the following NAMUR recommendations:

- NE 21 – Electromagnetic compatibility of equipment
- NE 53 – Compatibility of field devices and display/adjustment components
- NE 107 – Self-monitoring and diagnosis of field devices

For further information see www.namur.de.

1.8 Environmental instructions

Protection of the environment is one of our most important duties. That is why we have introduced an environment management system with the goal of continuously improving company environmental protection. The environment management system is certified according to DIN EN ISO 14001.

Please help us fulfill this obligation by observing the environmental instructions in this manual:

- Chapter "*Packaging, transport and storage*"
- Chapter "*Disposal*"

2 Product description

2.1 Configuration

Type label

The type label contains the most important data for identification and use of the instrument:

Fig. 1: Layout of the type label (example)

1 *Instrument type*
2 *Product code*
3 *Field for approvals*
4 *Power supply and signal output, electronics*
5 *Protection rating*
6 *Measuring range*
7 *Permissible process pressure*
8 *Material, wetted parts*
9 *Hardware and software version*
10 *Order number*
11 *Serial number of the instrument*
12 *Data-Matrix-Code for Smartphone-App*
13 *Symbol of the device protection class*
14 *ID numbers, instrument documentation*
15 *Reminder to observe the instrument documentation*
16 *Notified authority for CE marking*
17 *Approval directive*

Serial number - Instrument search

The type label contains the serial number of the instrument. With it you can find the following instrument data on our homepage:

- Product code (HTML)
- Delivery date (HTML)
- Order-specific instrument features (HTML)
- Operating instructions and quick setup guide at the time of shipment (PDF)
- Order-specific sensor data for an electronics exchange (XML)
- Test certificate (PDF) - optional

Go to www.vega.com, "*VEGA Tools*" and "*Instrument search*". Enter the serial number.

Alternatively, you can access the data via your smartphone:

- Download the smartphone app "*VEGA Tools*" from the "*Apple App Store*" or the "*Google Play Store*"
- Scan the Data Matrix code on the type label of the instrument or
- Enter the serial number manually in the app

46323-EN-140801

3 Mounting

3.1 General instructions for use of the instrument

Protection against moisture

Protect your instrument against moisture ingress through the following measures:

- Use the recommended cable (see chapter "*Connecting to power supply*")
- Tighten the cable gland
- When mounting horizontally, turn the housing so that the cable gland points downward
- Loop the connection cable downward in front of the cable gland

This applies particularly to:

- Outdoor mounting
- Installations in areas where high humidity is expected (e.g. through cleaning processes)
- Installations on cooled or heated vessels

3.2 Ventilation and pressure compensation

Instruments in non-Ex and Ex-ia version

The filter element is mounted into the electronics housing. It has the following functions:

- Ventilation of the electronics housing
- Atmospheric pressure compensation (with relative pressure measuring ranges)

→ Turn the housing so that the filter element points downward after the instrument is installed. This provides better protection against buildup.

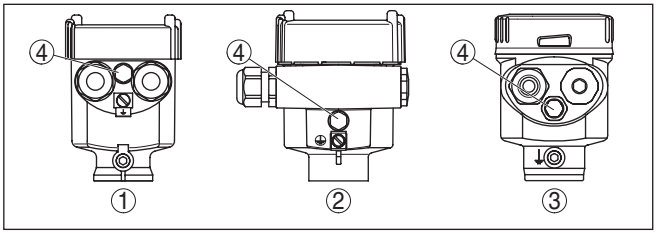


Fig. 2: Position of the filter element - non-Ex, Ex-ia version

1 Housing plastic, stainless steel precision casting
2 Housing aluminium
3 Housing stainless steel, electropolished
4 Filter element

With the following instruments a blind plug is installed instead of the filter element:

- Instruments in protection IP 66/IP 68 (1 bar) - ventilation via capillaries in non-detachable cable
- Instruments with absolute pressure

4 Connecting to the bus system

4.1 Connecting

Connection technology

The voltage supply and signal output are connected via the spring-loaded terminals in the housing.

Connection to the display and adjustment module or to the interface adapter is carried out via contact pins in the housing.

Information:
The terminal block is pluggable and can be removed from the electronics. To do this, lift the terminal block with a small screwdriver and pull it out. When reinserting the terminal block, you should hear it snap in.

Connection procedure

Proceed as follows:

1. Unscrew the housing cover
2. If a display and adjustment module is installed, remove it by turning it slightly to the left.
3. Loosen compression nut of the cable entry gland
4. Remove approx. 10 cm (4 in) of the cable mantle, strip approx. 1 cm (0.4 in) of insulation from the ends of the individual wires
5. Insert the cable into the sensor through the cable entry

Fig. 3: Connection steps 5 and 6 - Single chamber housing

Fig. 4: Connection steps 5 and 6 - Double chamber housing

6. Insert the wire ends into the terminals according to the wiring plan

Information:
Solid cores as well as flexible cores with wire end sleeves are inserted directly into the terminal openings. In case of flexible cores without end sleeves, press the terminal from above with a small screwdriver, the terminal opening is then free. When the screwdriver is released, the terminal closes again.

You can find further information on the max. wire cross-section under "*Technical data/Electromechanical data*"

7. Check the hold of the wires in the terminals by lightly pulling on them
8. Connect the screen to the internal ground terminal, connect the outer ground terminal to potential equalisation
9. Tighten the compression nut of the cable entry gland. The seal ring must completely encircle the cable
10. Reinsert the display and adjustment module, if one was installed
11. Screw the housing cover back on

The electrical connection is finished.

4.2 Single chamber housing

The following illustration applies to the non-Ex, Ex-ia and Ex-d version.

Electronics and terminal compartment

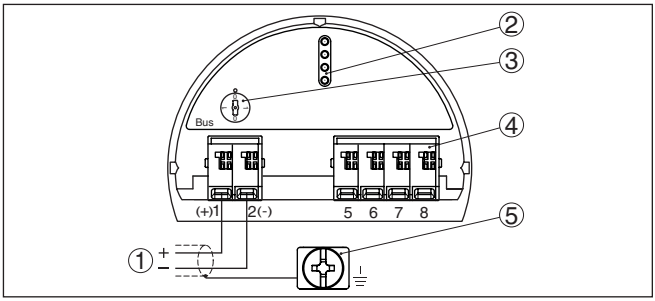


Fig. 5: Electronics and terminal compartment, single chamber housing

1 Voltage supply, signal output
2 Contact pins for the display and adjustment module or interface adapter
3 Simulation switch ("1" = mode for simulation release)
4 For external display and adjustment unit
5 Ground terminal for connection of the cable screen

4.3 Double chamber housing

The following illustrations apply to the non-Ex as well as to the Ex-ia version.

Electronics compartment

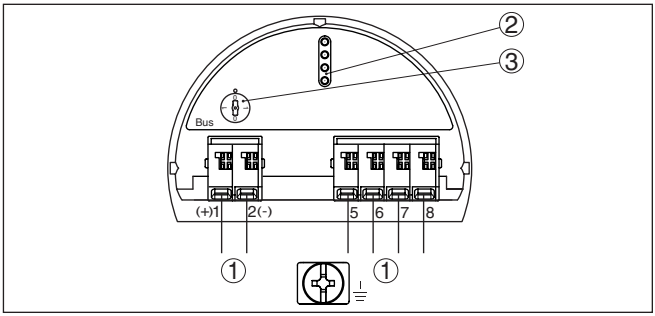


Fig. 6: Electronics compartment, double chamber housing

1 Internal connection to the terminal compartment
2 Contact pins for the display and adjustment module or interface adapter
3 Simulation switch ("1" = mode for simulation release)

Terminal compartment

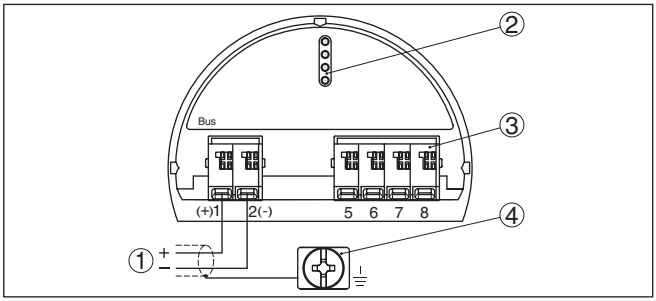


Fig. 7: Terminal compartment, double chamber housing

1 Voltage supply, signal output
2 For display and adjustment module or interface adapter
3 For external display and adjustment unit
4 Ground terminal for connection of the cable screen

Information:
Parallel use of an external display and adjustment unit and a display and adjustment module in the terminal compartment is not supported.

5 Set up with the display and adjustment module

5.1 Insert display and adjustment module

The display and adjustment module can be inserted into the sensor and removed again at any time. You can choose any one of four different positions - each displaced by 90°. It is not necessary to interrupt the power supply.

Proceed as follows:

1. Unscrew the housing cover
2. Place the display and adjustment module on the electronics in the desired position and turn it to the right until it snaps in.
3. Screw housing cover with inspection window tightly back on

Disassembly is carried out in reverse order.

The display and adjustment module is powered by the sensor, an additional connection is not necessary.

Fig. 8: Installing the display and adjustment module in the electronics compartment of the single chamber housing

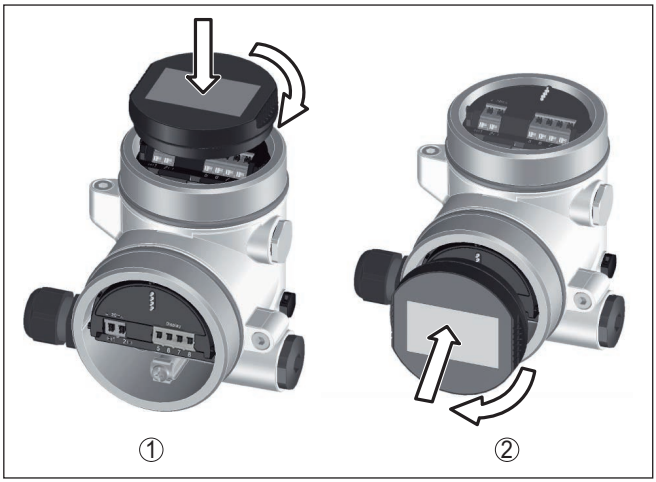


Fig. 9: Installing the display and adjustment module in the double chamber housing

1 In the electronics compartment
2 In the terminal compartment

Note:
If you intend to retrofit the instrument with a display and adjustment module for continuous measured value indication, a higher cover with an inspection glass is required.

5.2 Parameter adjustment - Quick setup

To quickly and easily adapt the sensor to the application, select the menu item "*Quick setup*" in the start graphic on the display and adjustment module.

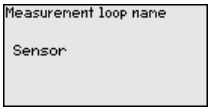
Carry out the following steps in the below sequence.

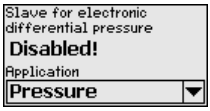
You can find "*Extended adjustment*" in the next sub-chapter.

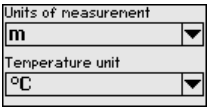
Quick setup - Presettings

1. Application
In this menu item, you activate/deactivate the slave for the electronic differential pressure and select the application. The application comprises process pressure and level measurement.

2. Units
In this menu item you determine the adjustment and temperature units of the instrument. Depending on the selected application in the menu item "*Application*", different adjustment units are available.







Quick setup - Process pressure measurement

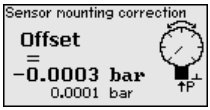
3. Position correction
In this menu item you compensate the influence of the installation position of the instrument (offset) on the measured value.

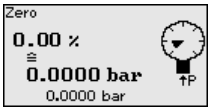
4. Zero adjustment
In this menu item you carry out the zero adjustment for the processs pressure.

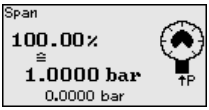
Enter the corresponding pressure value for 0 %.

5. Span adjustment
In this menu item you carry out the span adjustment for the processs pressure

Enter the corresponding pressure value for 100 %.







Quick setup - Level measurement

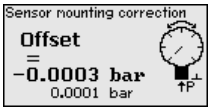
3. Position correction
In this menu item you compensate the influence of the installation position of the instrument (offset) on the measured value.

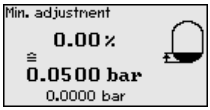
4. Max. adjustment
In this menu item you carry out the max. adjustment for level

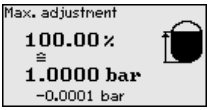
Enter the percentage value and the corresponding value for the max. level.

5. Min. adjustment
In this menu item you carry out the min. adjustment for level

Enter the percentage value and the corresponding value for the min. level.







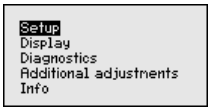
The quick setup is finished.

5.3 Parameter adjustment - Extended adjustment

For technically demanding measuring points, you can carry out extended settings in "*Extended adjustment*".

Main menu

The main menu is divided into five sections with the following functions:



Setup: Settings, e.g., for measurement loop name, application, units, position correction, adjustment, signal output

Display: Settings, e.g., for language, measured value display, lighting

Diagnosis: Information, e.g. on instrument status, pointer, measurement reliability, simulation

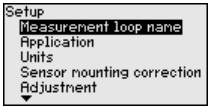
Additional adjustments: PIN, date/time, reset, copy function

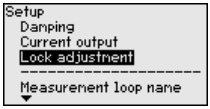
Info: Instrument name, hardware and software version, date of manufacture, device ID, sensor features

Note:
For optimum adjustment of the measuring point, the individual submenu items in the main menu item "*Setup*" should be selected one after the other and provided with the correct parameters. If possible, go through the items in the given sequence.

The procedure is described below.

The following submenu points are available:





The submenu points described below.

Menu overview

Setup

Menu item	Parameter
Application	Process pressure Level Activation/Deactivation Slave for electronic differential pressure
Units	Unit of measurement
	Temperature unit
Position correction	
Adjustment	Zero/Min. adjustment
	Span/Max. adjustment
Damping	Integration time
Linearization	Linearization type
Lock adjustment	

Display

Menu item
Menu language
Displayed value 1
Displayed value 2
Backlight

Diagnostics

Menu item	Parameter
Sensor status	
Peak value indicator	Pressure
	Temperature
Simulation	

Additional adjustments

Menu item	Parameter
PIN	
Date/Time	
Copy instrument settings	
Special parameters	
Scaling	Scaling size
	Scaling format

6 Supplement

6.1 Technical data

Electromechanical data - version IP 66/IP 67 and IP 66/IP 68; 0.2 bar	
Cable entry	
– M20 x 1.5	1 x cable gland M20 x 1.5 (cable: ø 6 … 12 mm), 1 x blind plug M20 x 1.5
– ½ NPT	1 x blind plug NPT, 1 x closing cap (red) ½ NPT
Wire cross-section (spring-loaded terminals)	
– Massive wire, stranded wire	0.2 … 2.5 mm² (AWG 24 … 14)
– Stranded wire with end sleeve	0.2 … 1.5 mm² (AWG 24 … 16)

Voltage supply	
Operating voltage	
– Non-Ex instrument	9 … 32 V DC
– Ex-ia instrument - Power supply FISCO model	9 … 17.5 V DC
– Ex-ia instrument - Power supply ENTITY model	9 … 24 V DC
– Ex-d instrument	14 … 32 V DC
Operating voltage U_B - illuminated display and adjustment module	
– Non-Ex instrument	13.5 … 32 V DC
– Ex-ia instrument - Power supply FISCO model	13.5 … 17.5 V DC
– Ex-ia instrument - Power supply ENTITY model	13.5 … 24 V DC
Power supply by/max. number of sensors	
– Fieldbus	max. 32 (max. 10 with Ex)

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Printing date:

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
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